

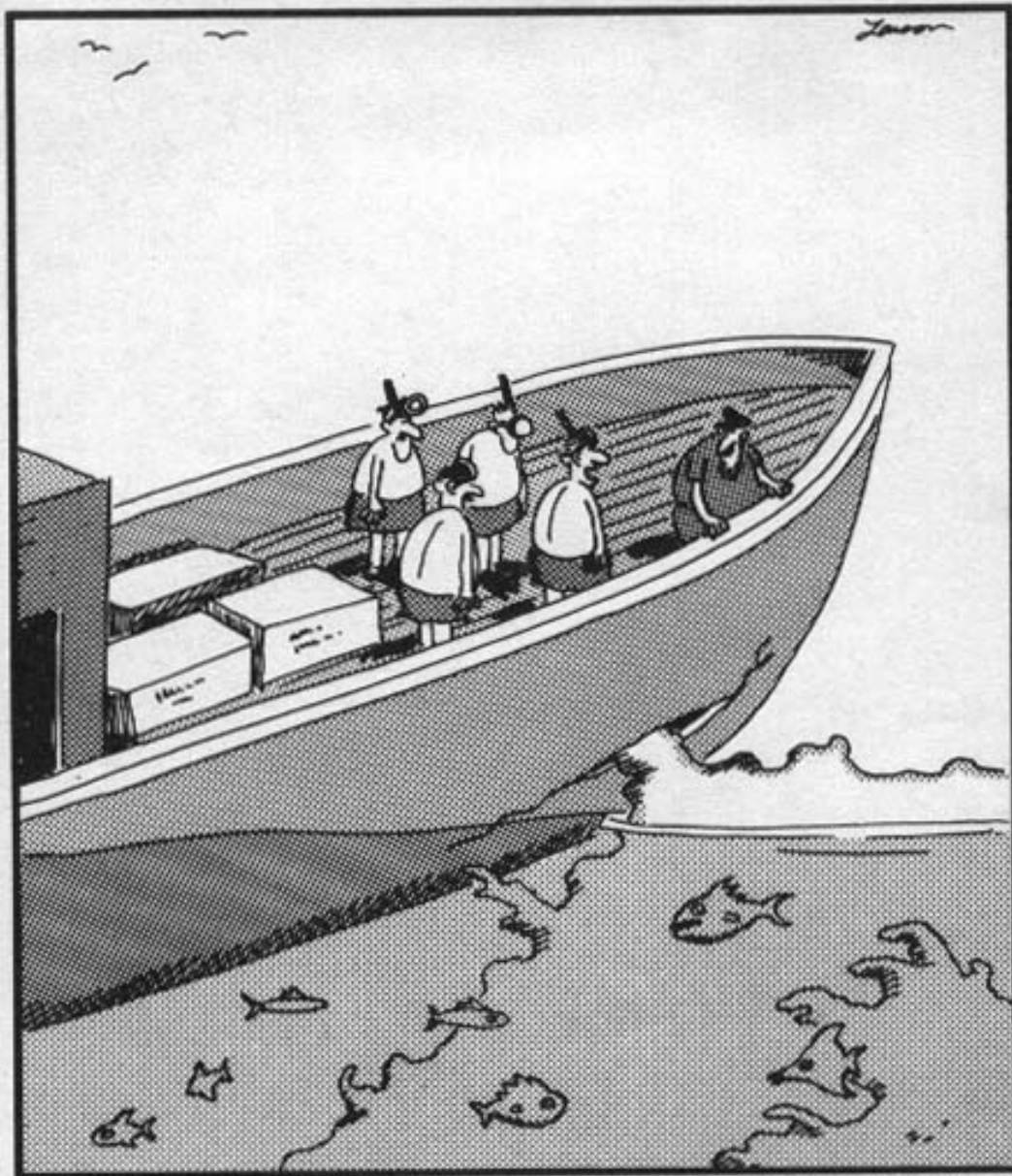
Effects of Light on Coral Reproduction and Recruitment

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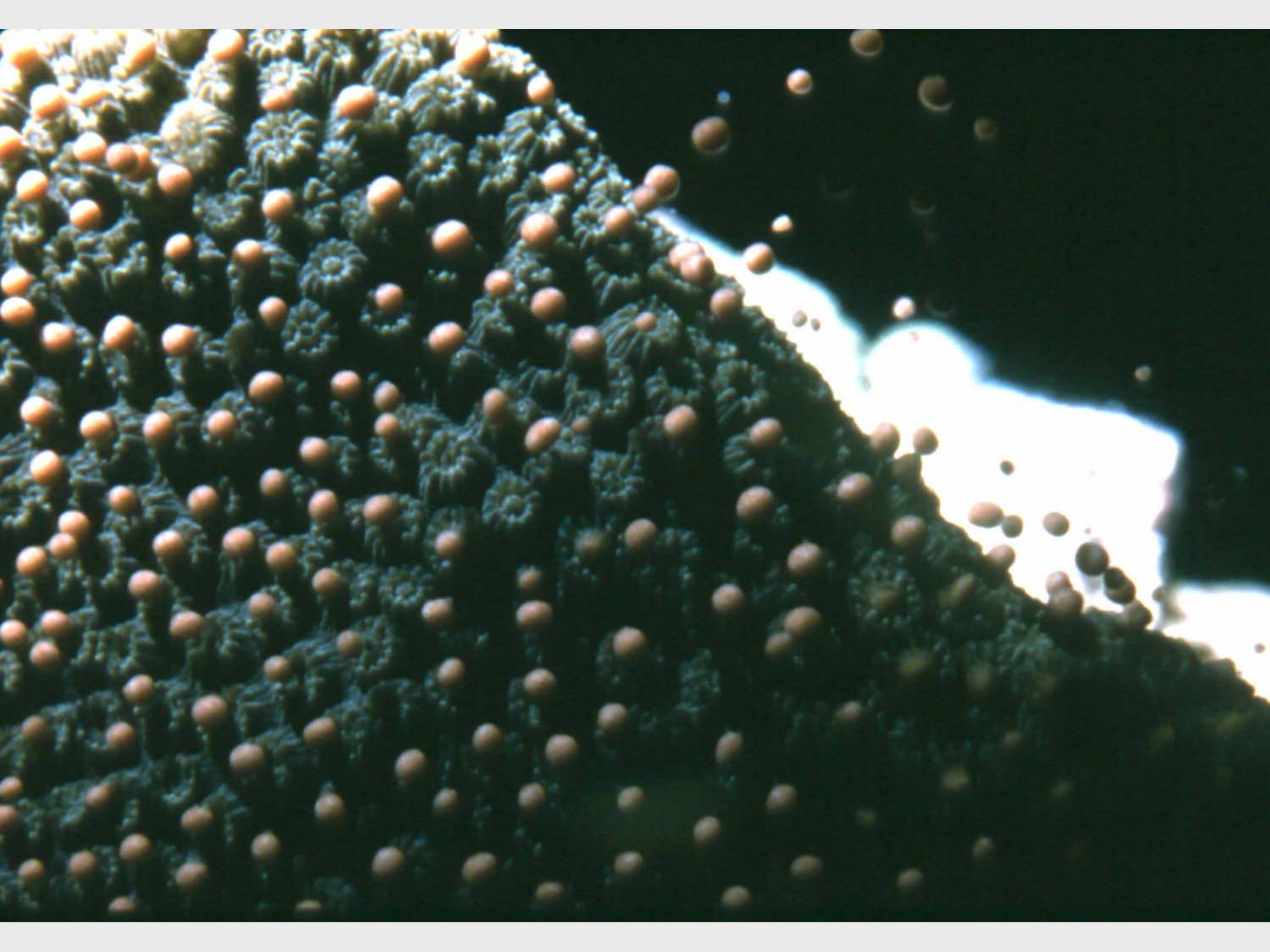
"Excuse me, Captain, but while we're waiting,
would you like to join the crew and
myself for a little snorkeling?"

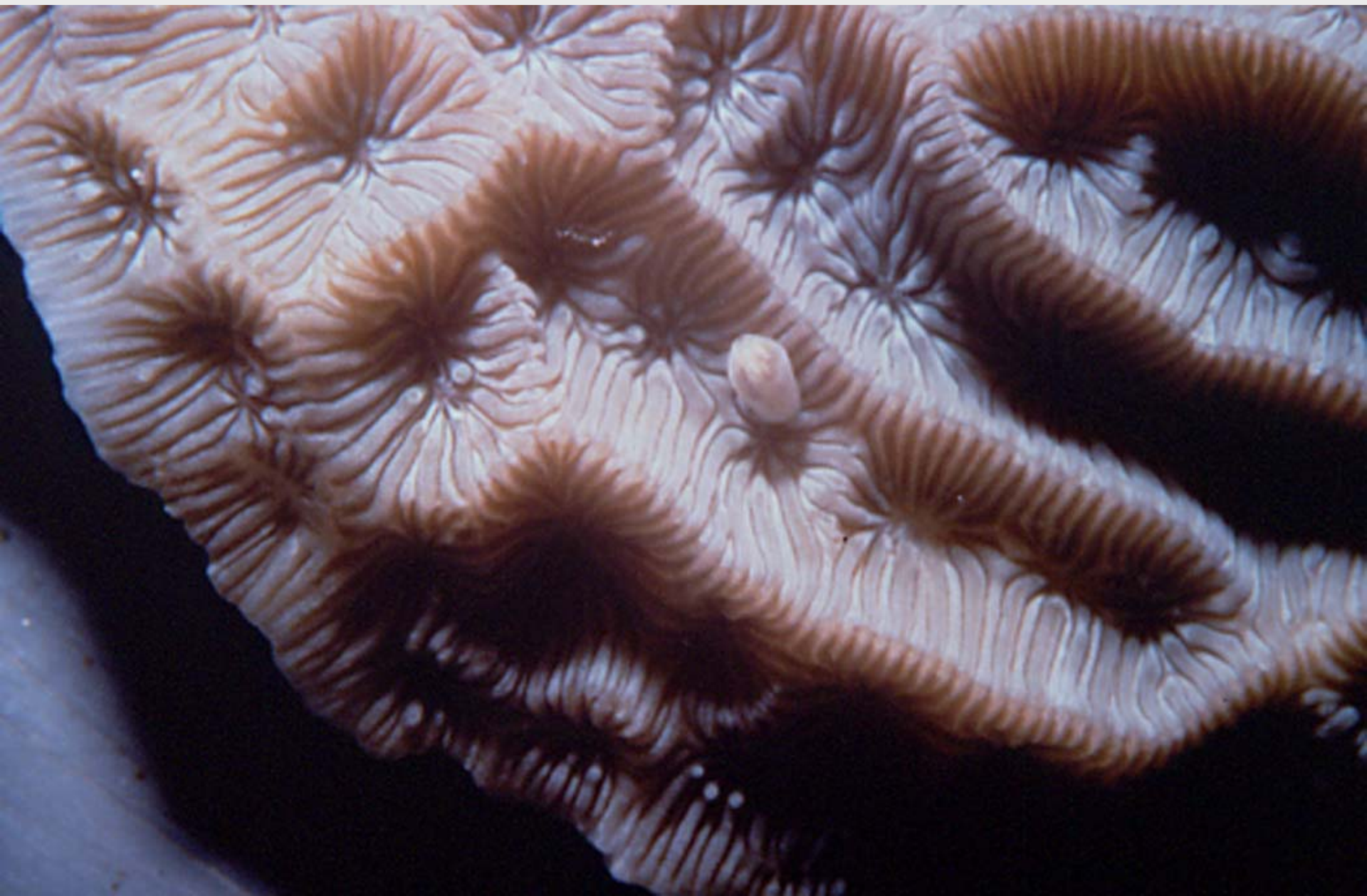




Controls on Coral Recruitment

- During dispersal.
 - Mortality in the plankton?
- Just prior to and during settlement
 - Chemical cues.
 - Light cues.
- After settlement.
 - Competition.
 - Grazing.
 - Physical factors?



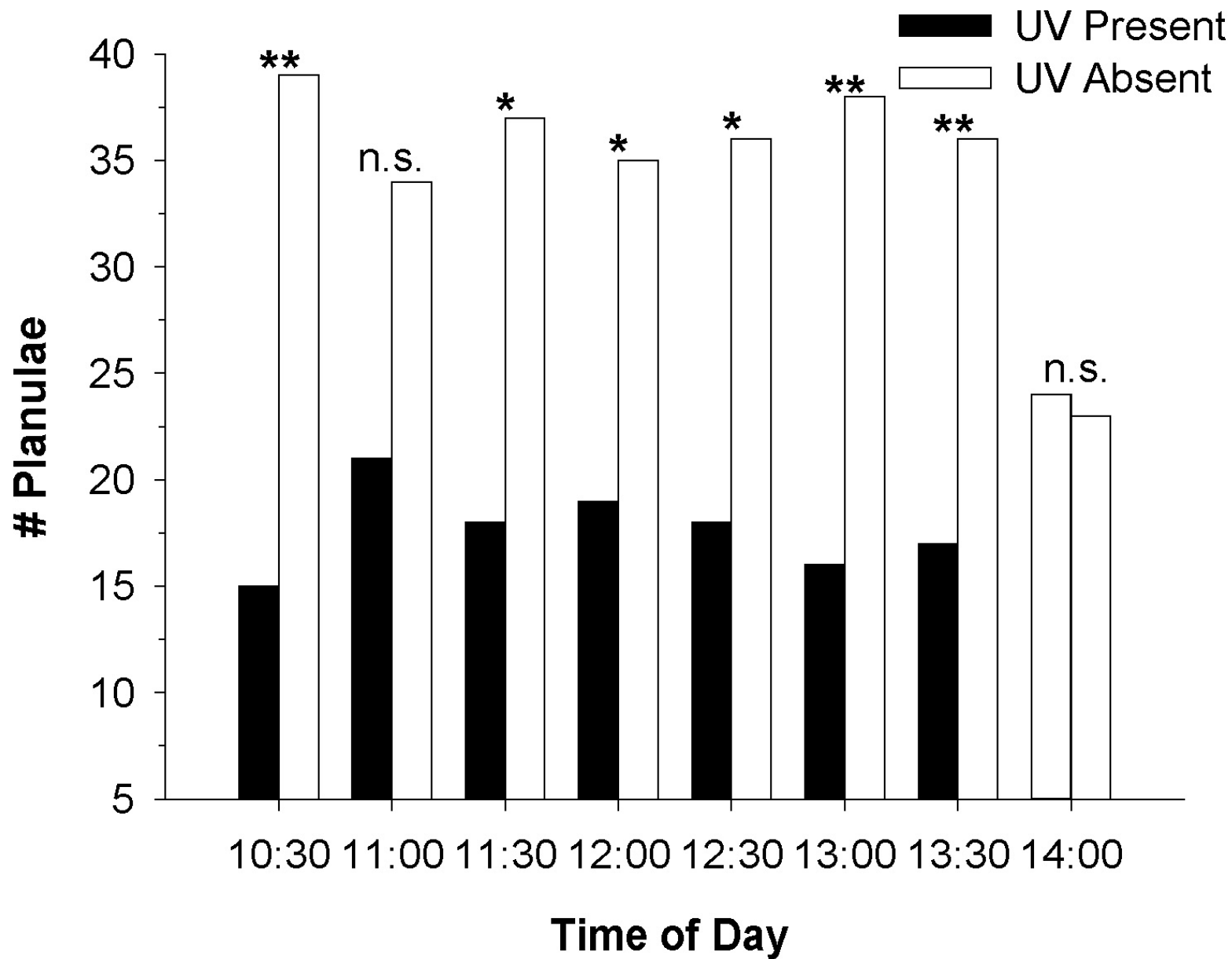


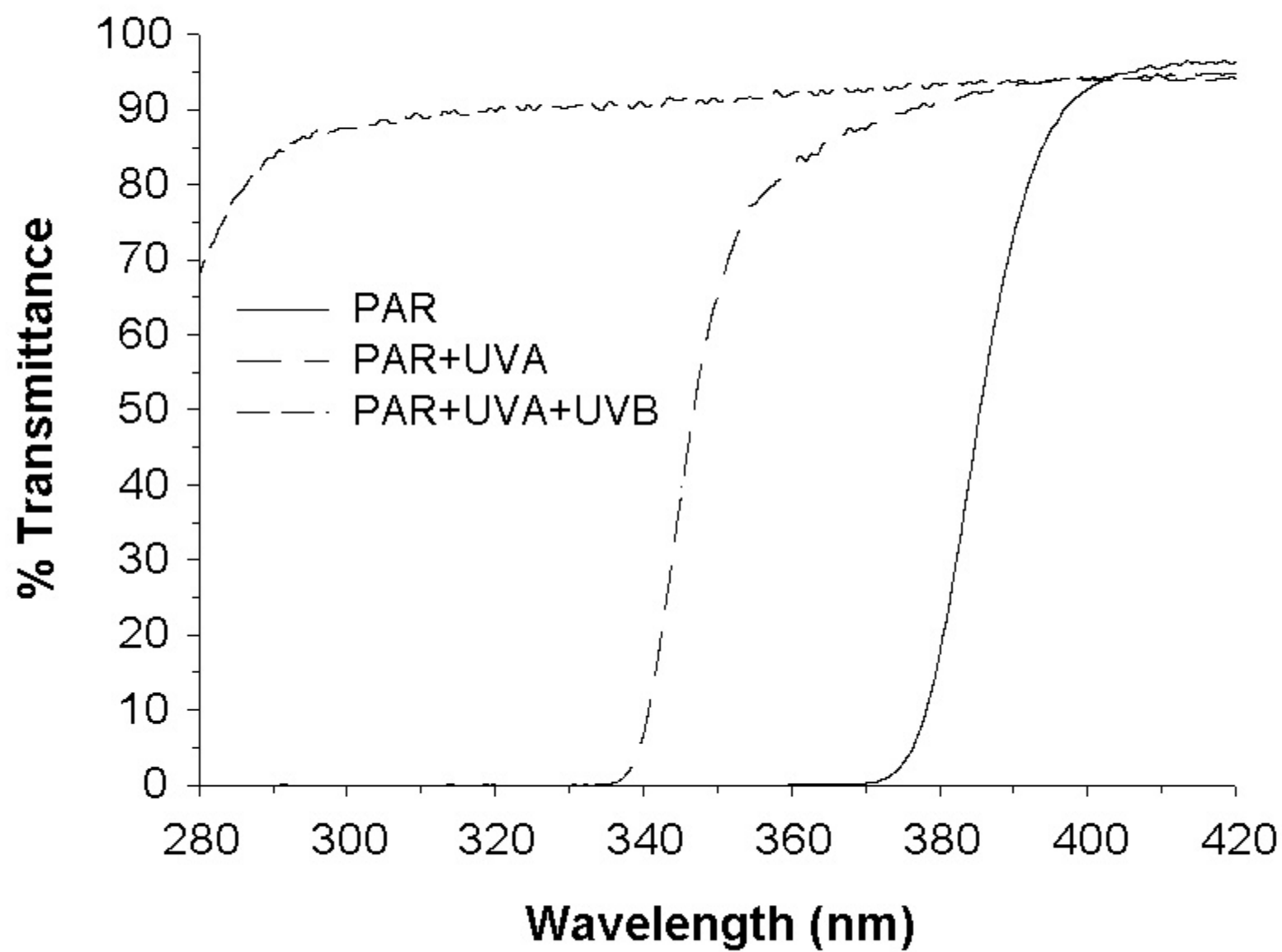
Questions Addressed

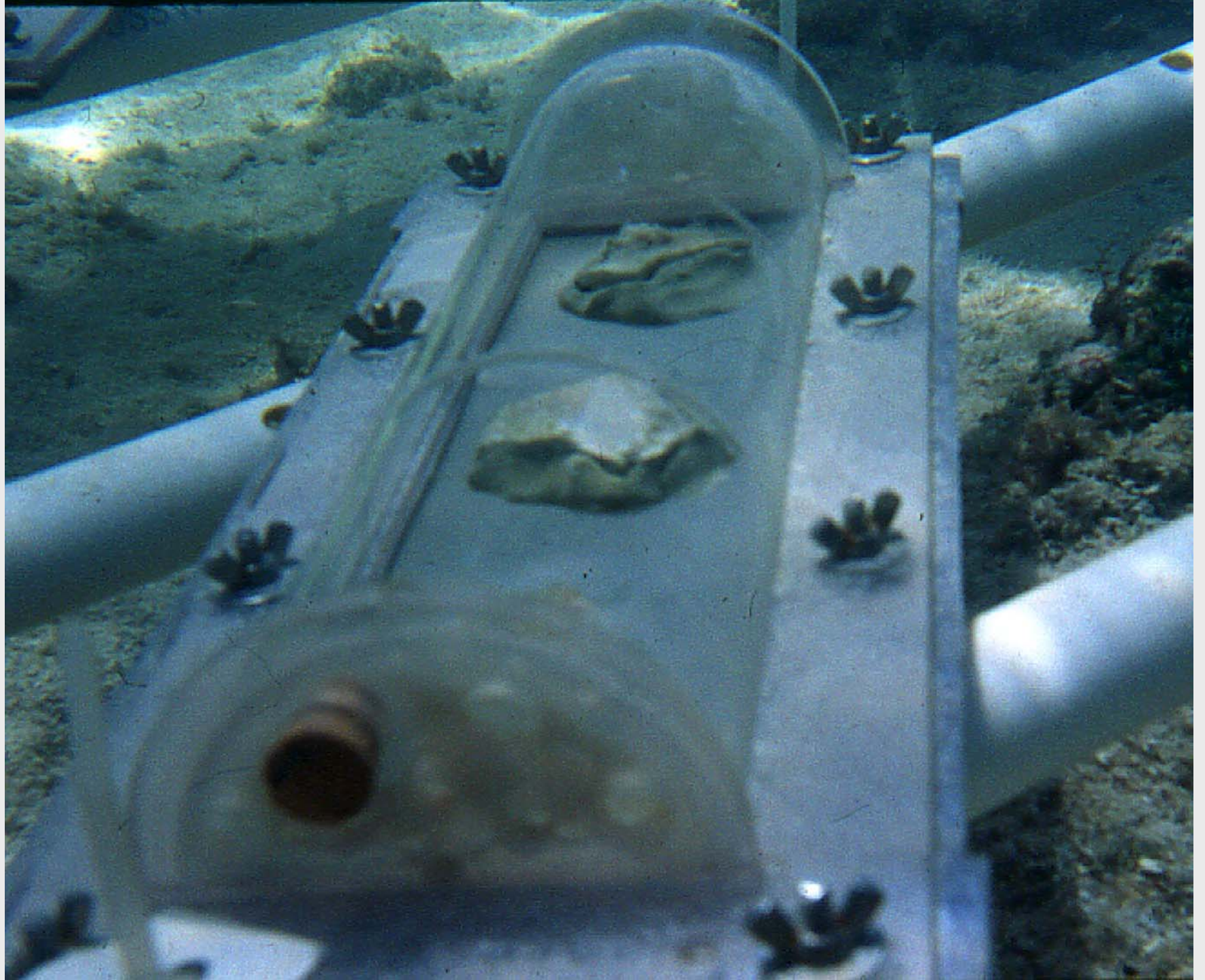
In the Caribbean coral *Porites astreoides*

- Can larvae detect and avoid UVR?
- Does larval avoidance of UVR affect patterns of recruitment?



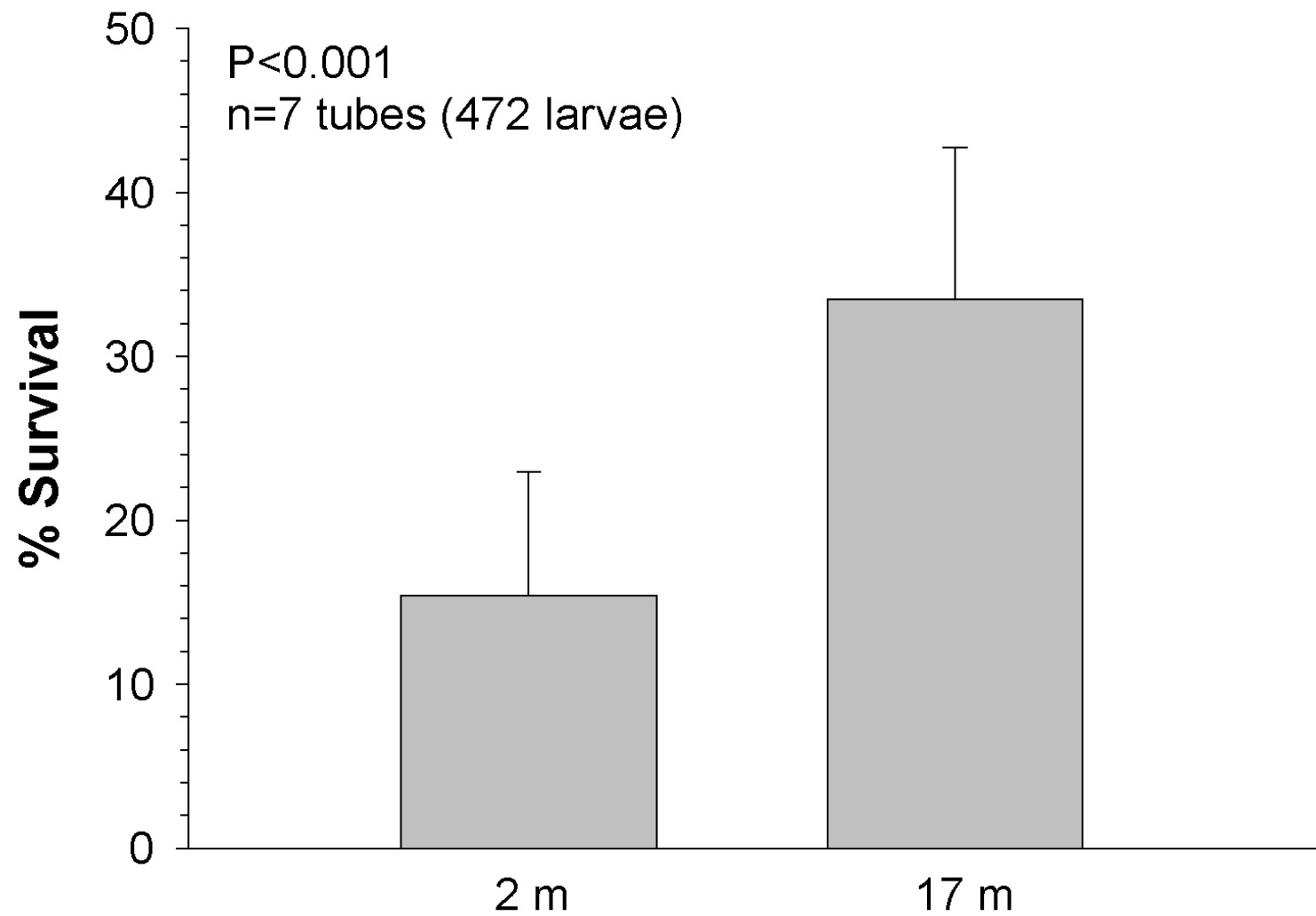


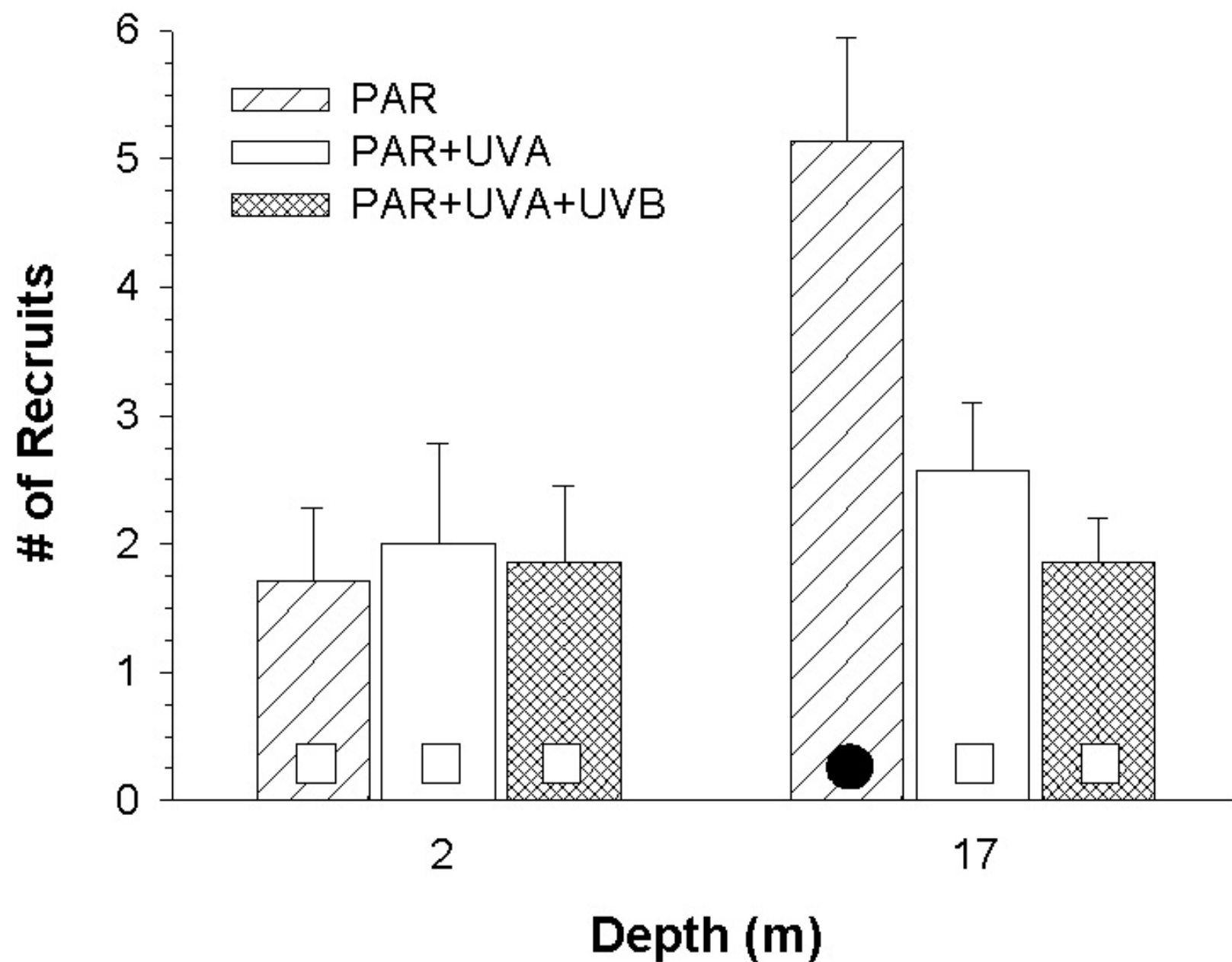




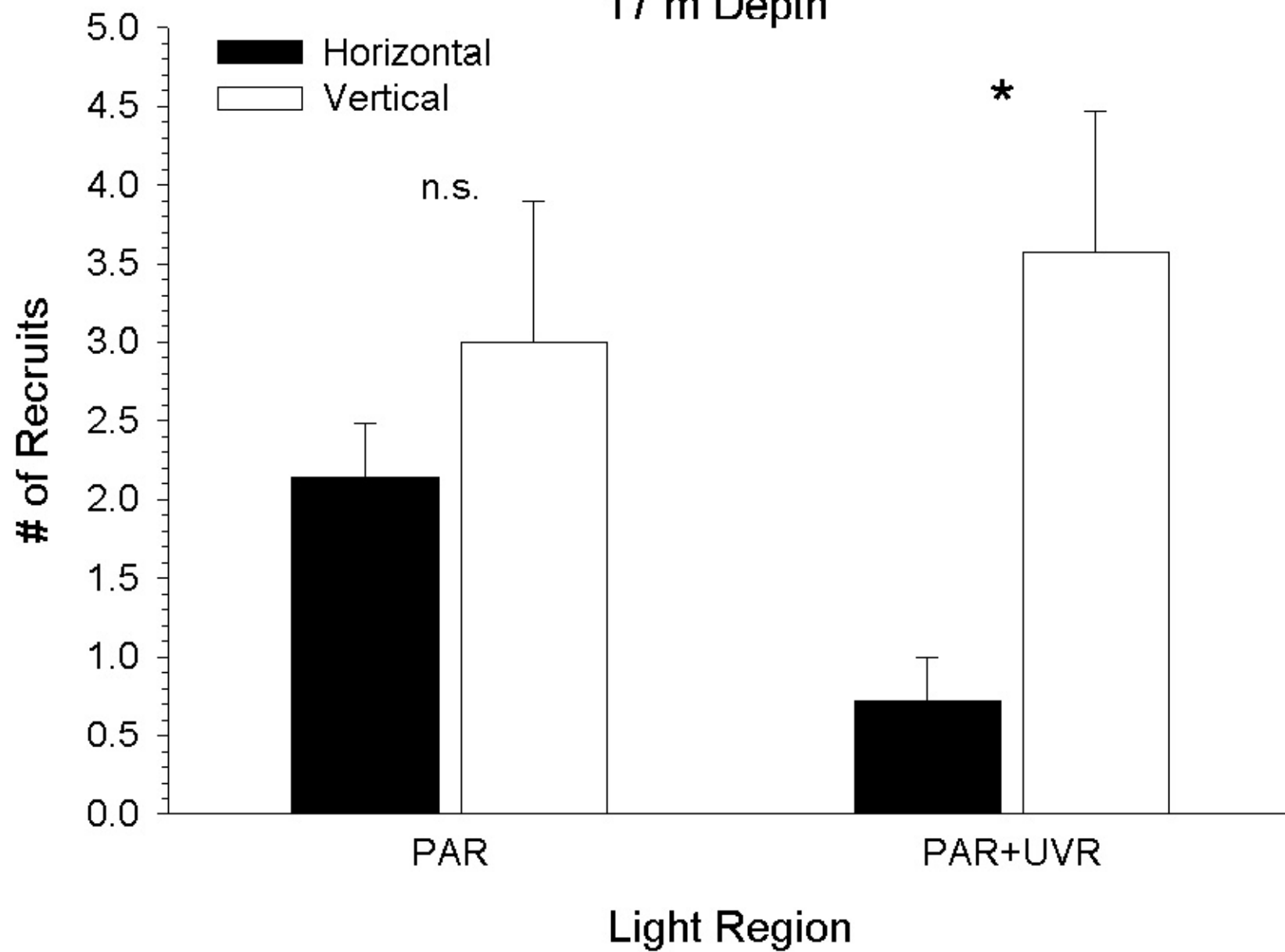
Light Intensity (W m^{-2})

Depth (m)	UVBR (300-320 nm)	UVAR (320-400 nm)	PAR (400-700 nm)
2	0.44	16.76	229.12
17	0.05	8.91	97.43





17 m Depth



Reductions in UVR Exposure

- UVR reduced by 20% at angle of 50° from horizontal.
 - Browne et al. (1994)

Summary

- Coral larvae can actively avoid UVR.
- Larvae exposed to UVR settle on vertical substrates or in crevices.
- High light causes mortality of dispersing larvae and/or new recruits.

Conclusion

- Settlement behavior of coral larvae maximizes PAR exposure while minimizing UVR exposure.

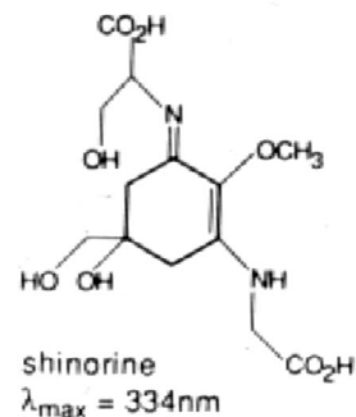
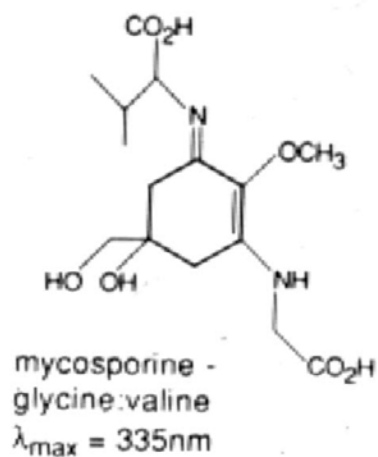
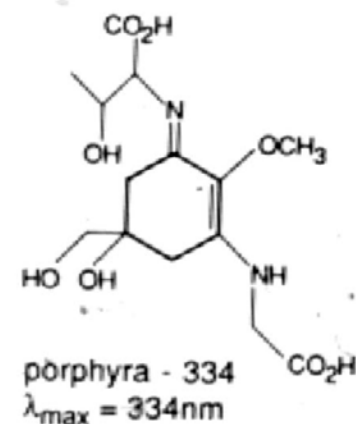
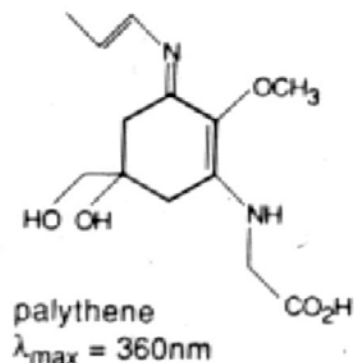
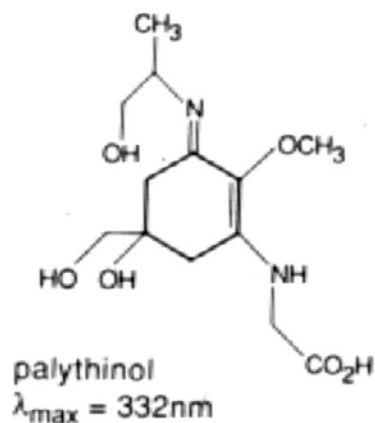
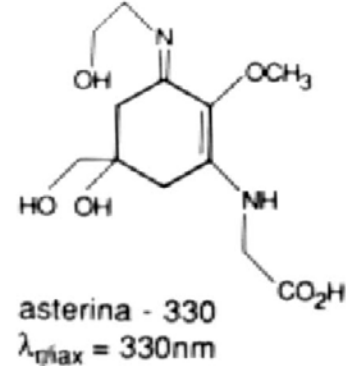
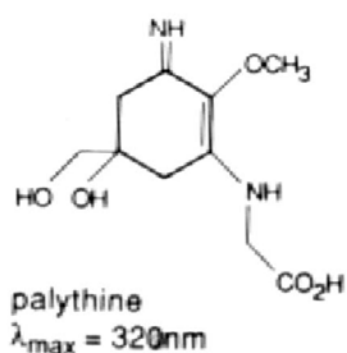
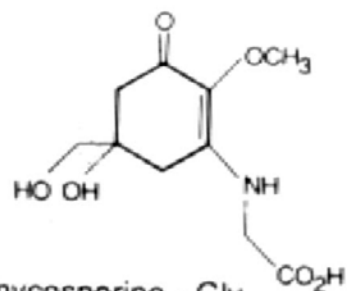
What if larvae duped into making bad choice?

- Polyp bail-out.
- Acclimate.

Questions Addressed

In the Caribbean coral *Porites astreoides*

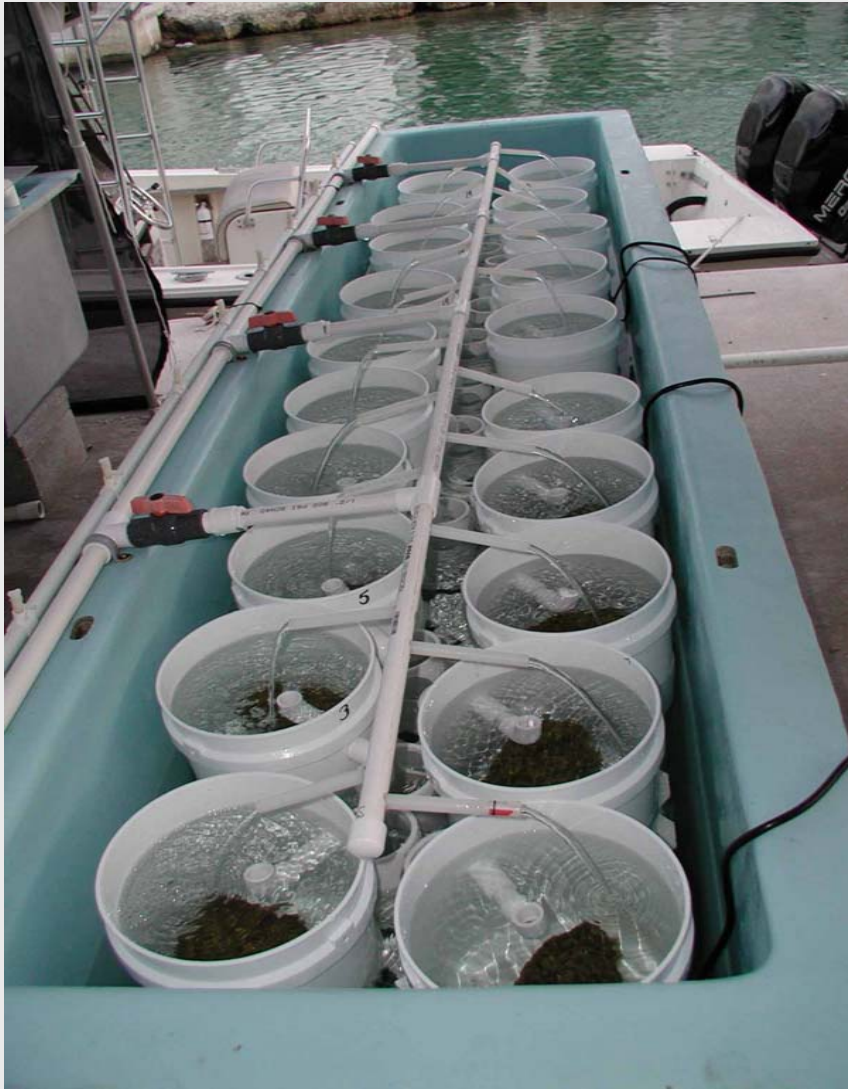
- Does exposure to high intensities of UVR affect recruit health?
- Do recruits acclimate to high UVR?



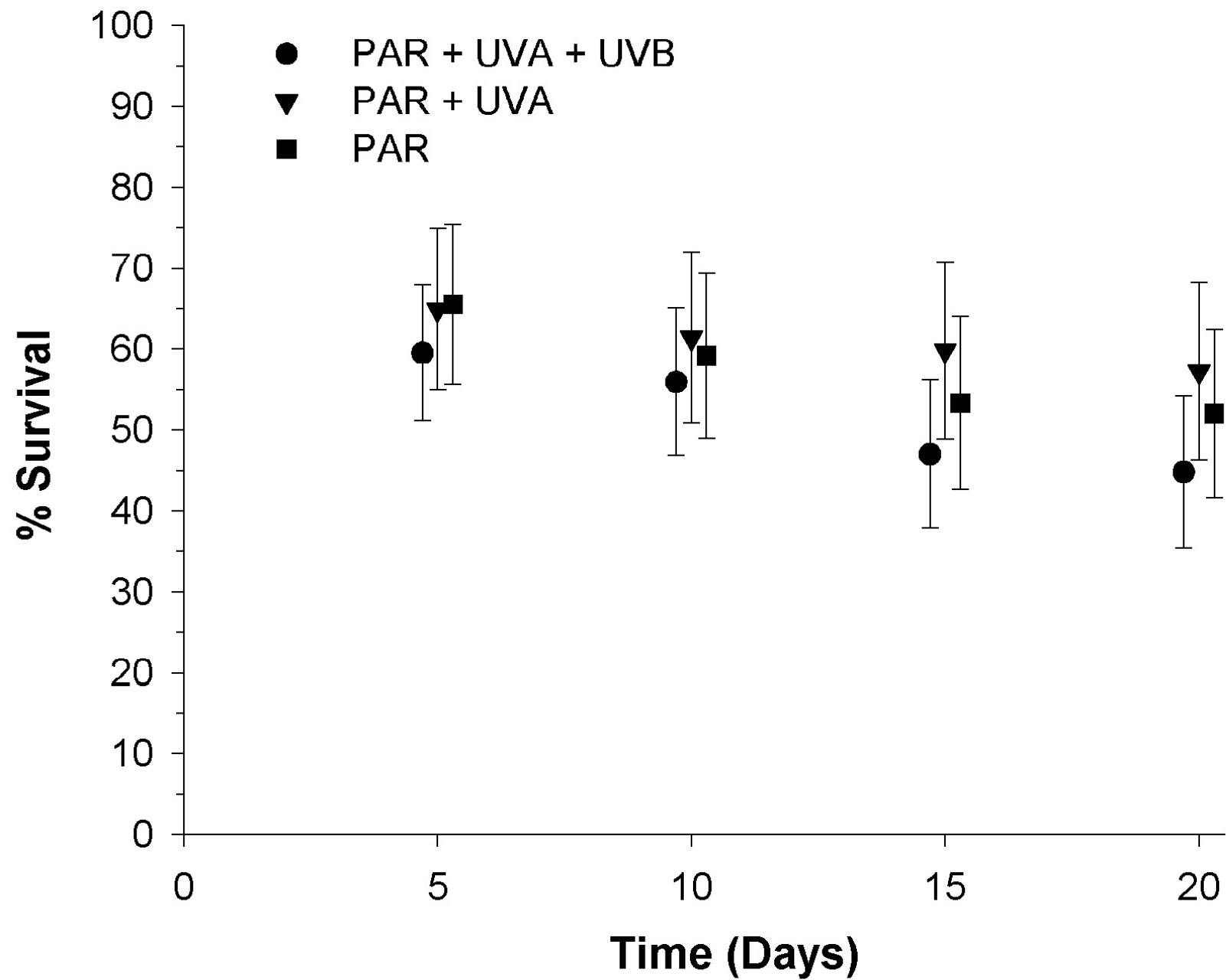
Carrie
MacKichan

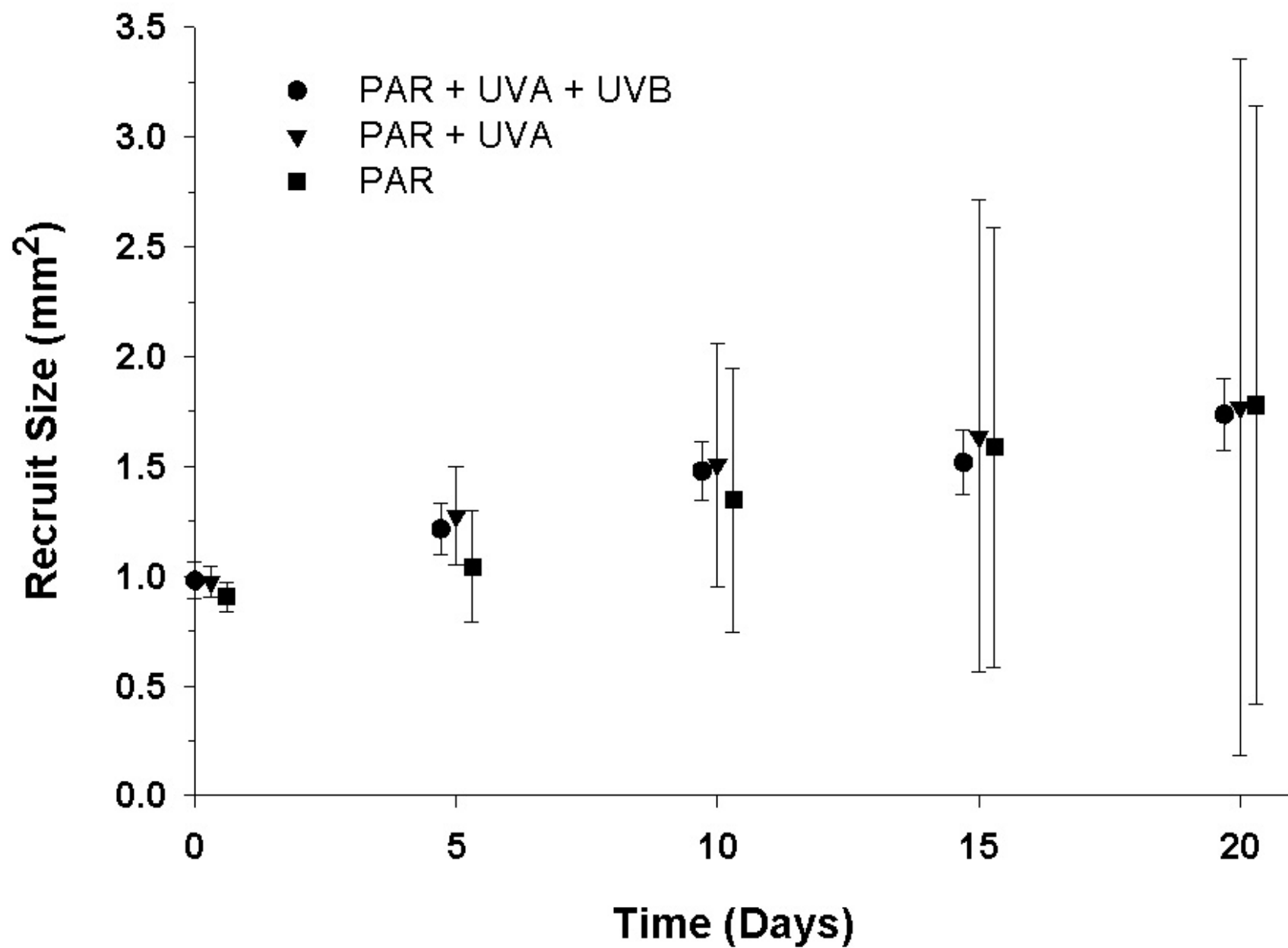


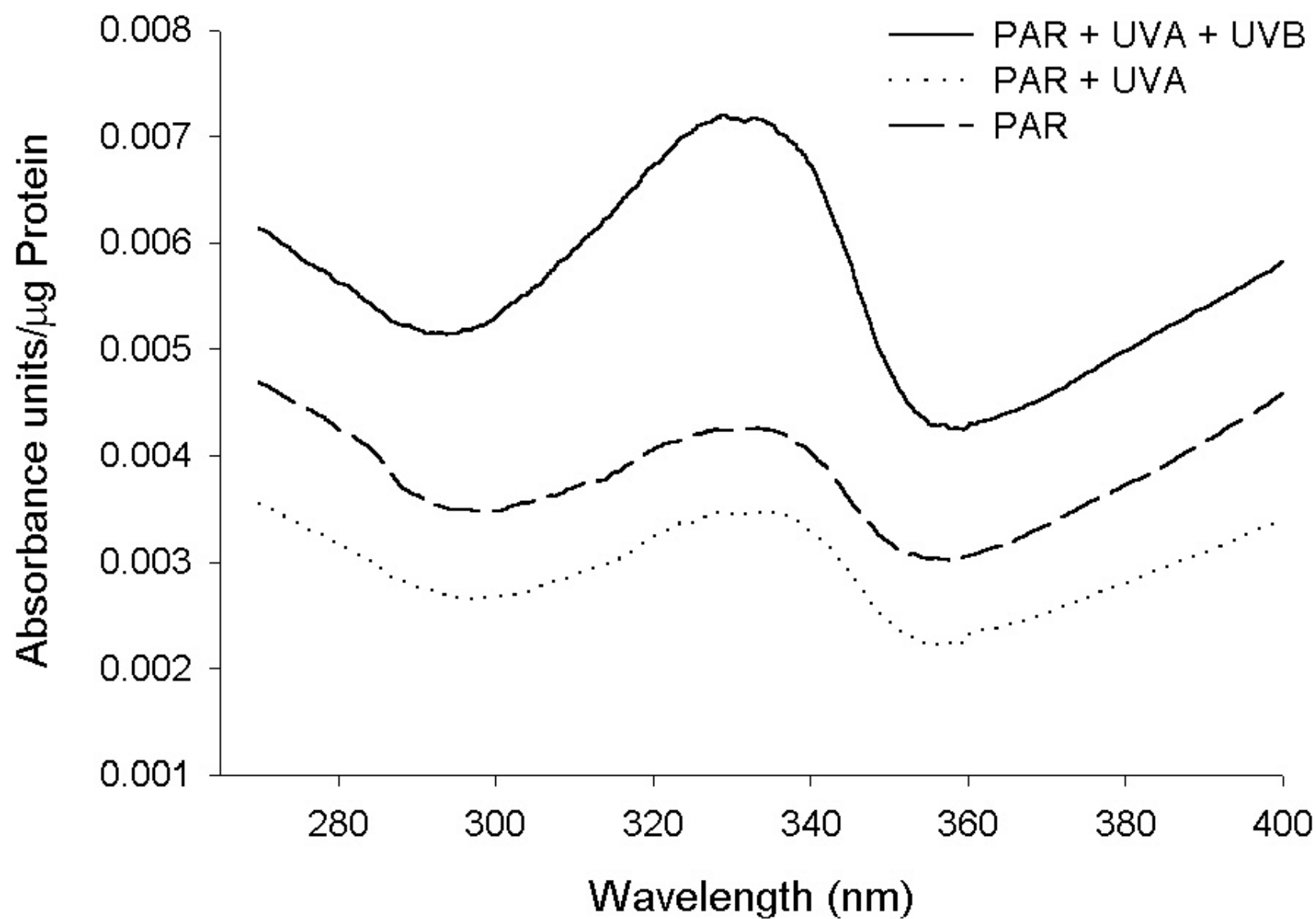
Collection of Larvae

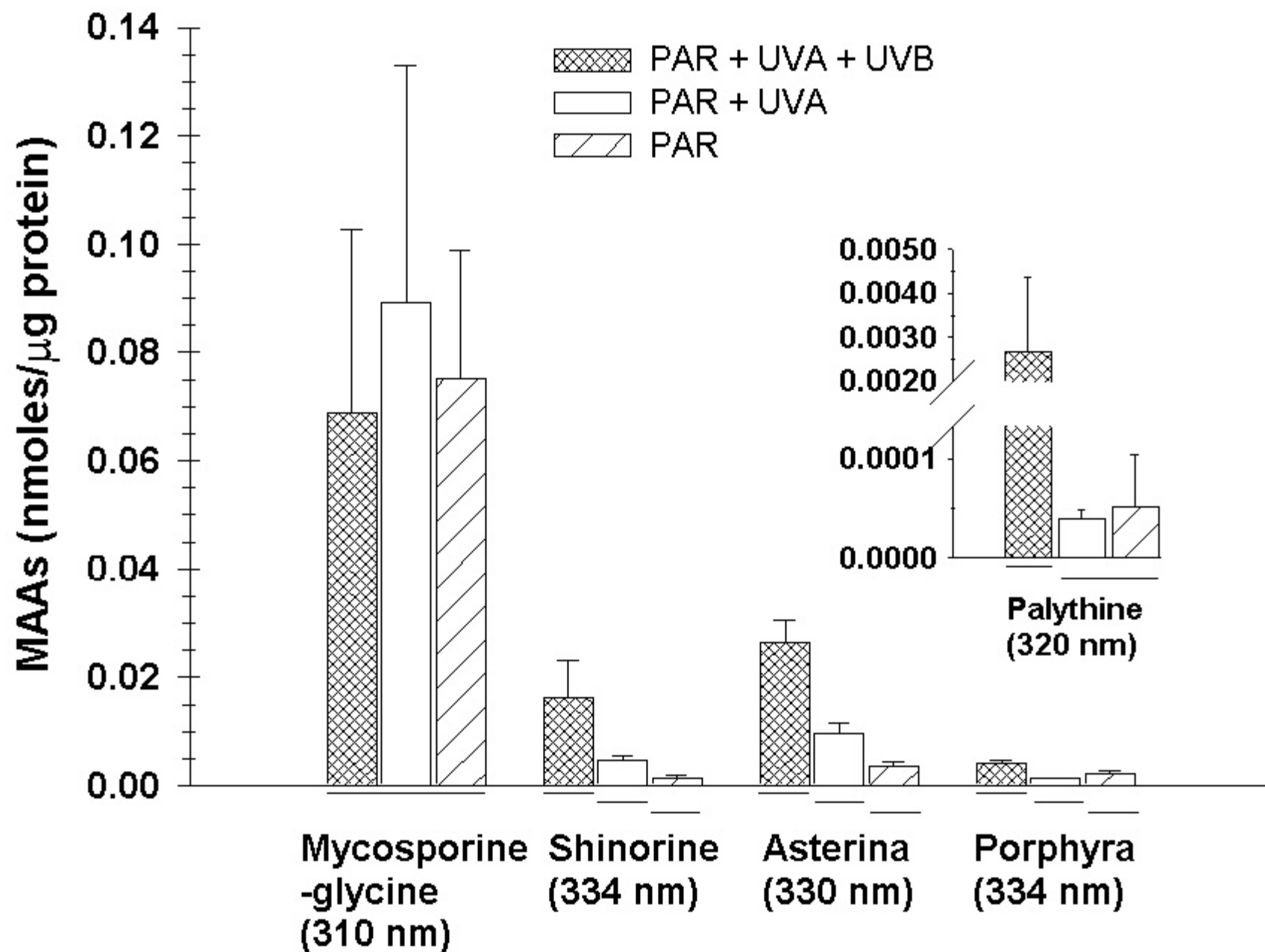












Summary

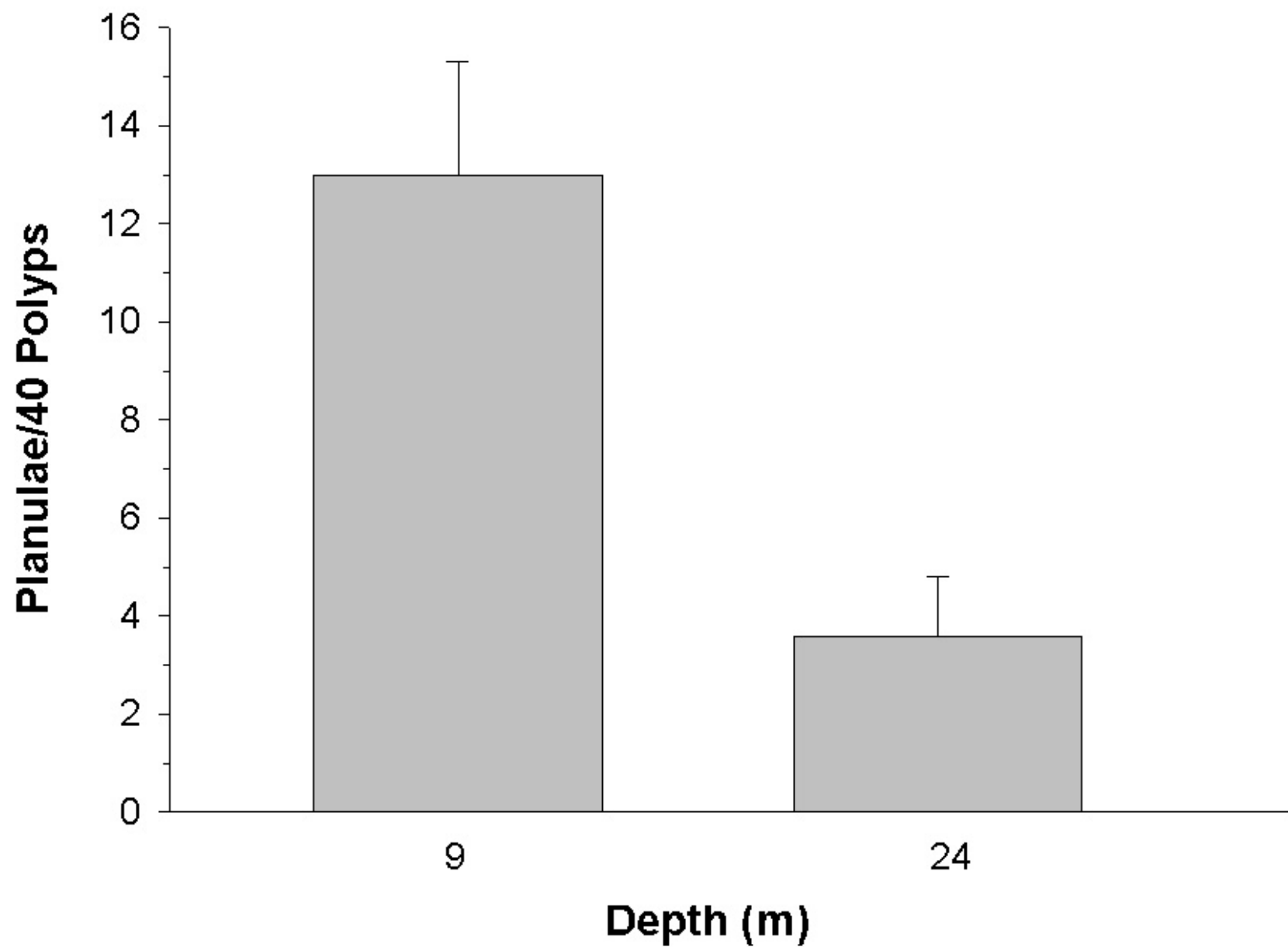
- UVR does not increase mortality or reduce growth of *P. astreoides* recruits.
- *P. astreoides* recruits can quickly acclimate to high UVR.

Conclusion

- Variability in light penetration impacts the availability of larval settlement sites.
- Light effects on coral recruitment are wavelength dependent.

Effects of Light on Coral Reproduction



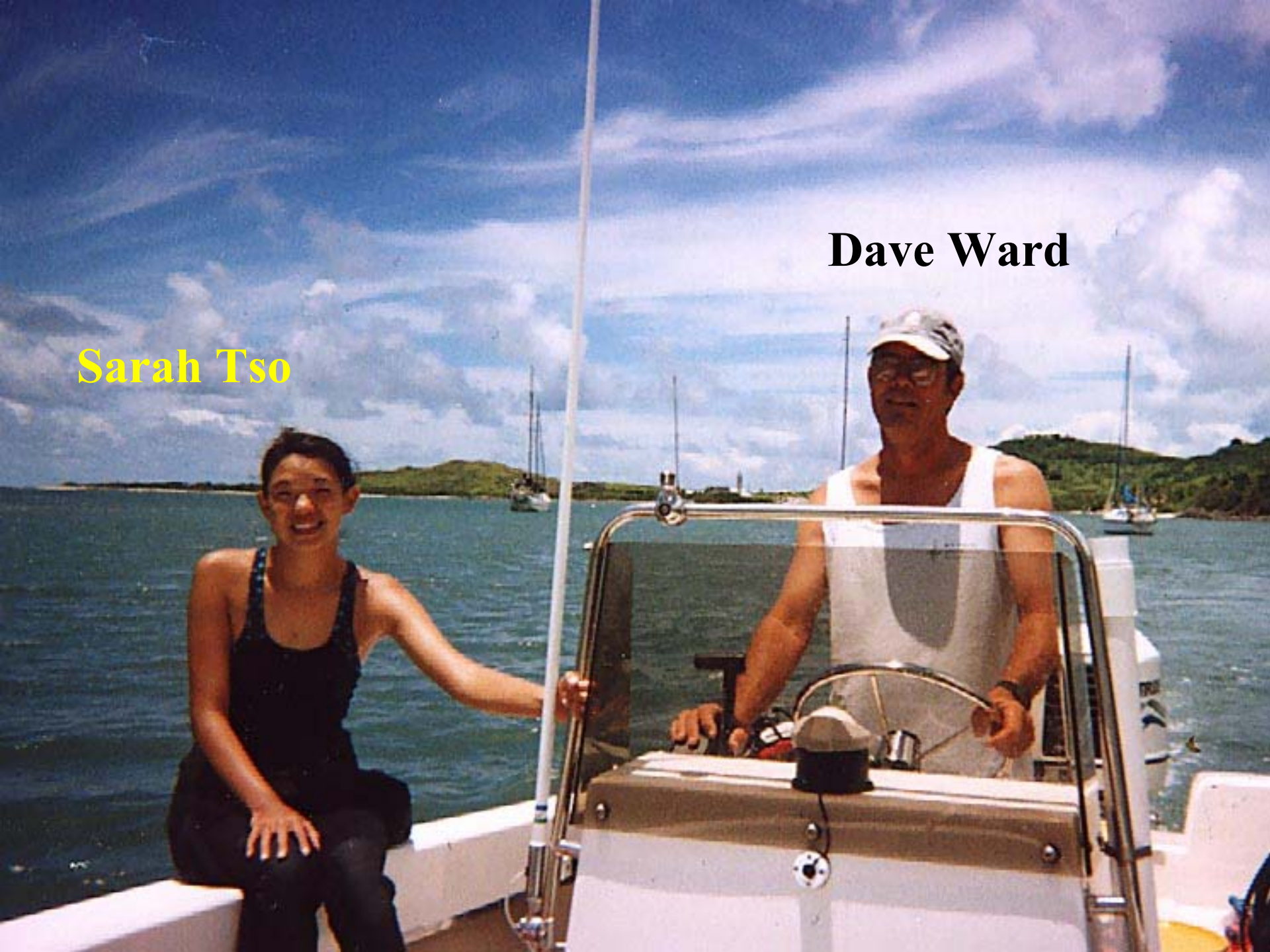


Questions Addressed

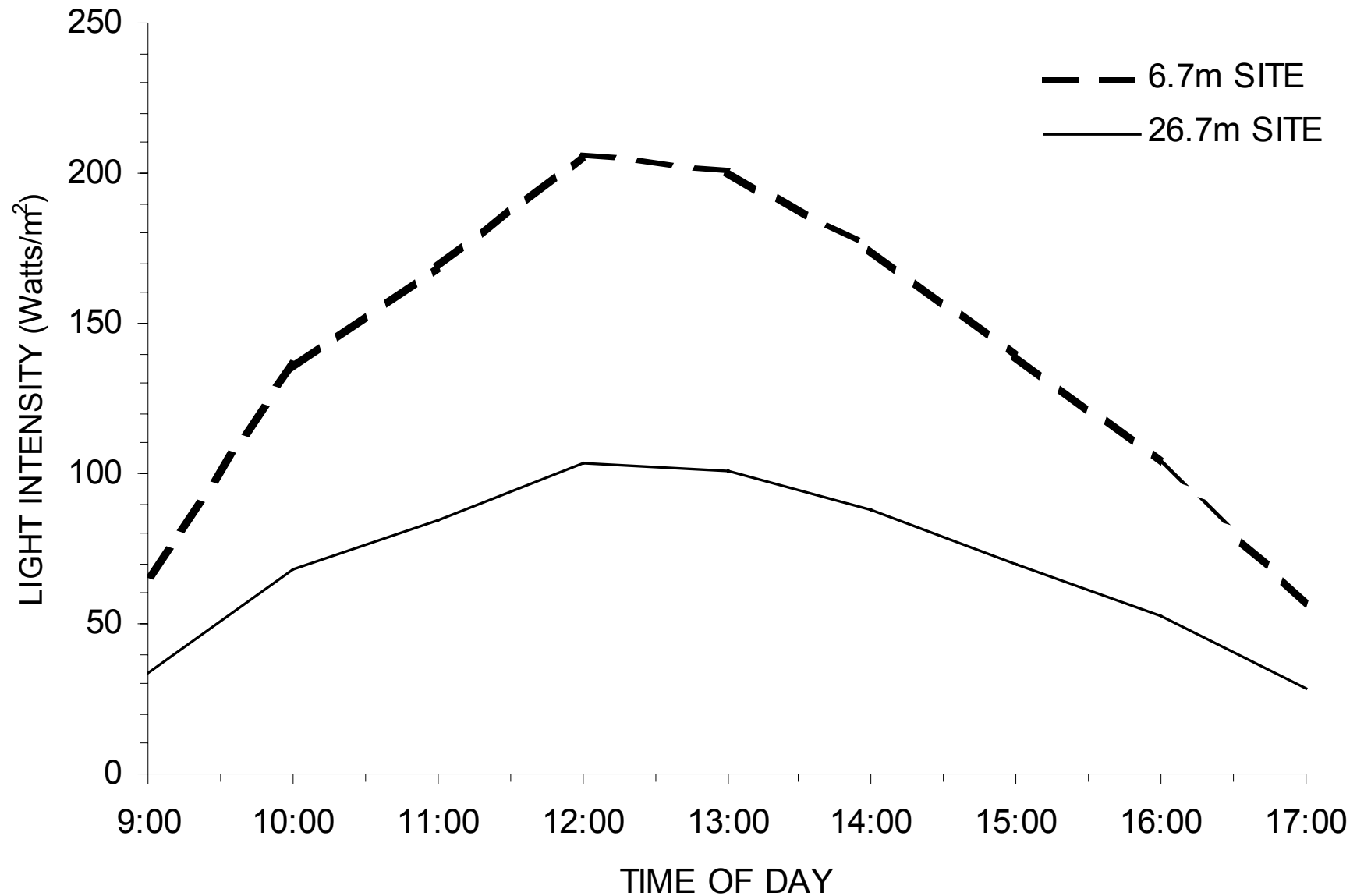
- What is the effect of the change in light energy along a depth gradient on:
 - Absolute abundances of ova and spermaries
 - Relative allocation to ova and spermaries in hermaphrodites.

Sarah Tso

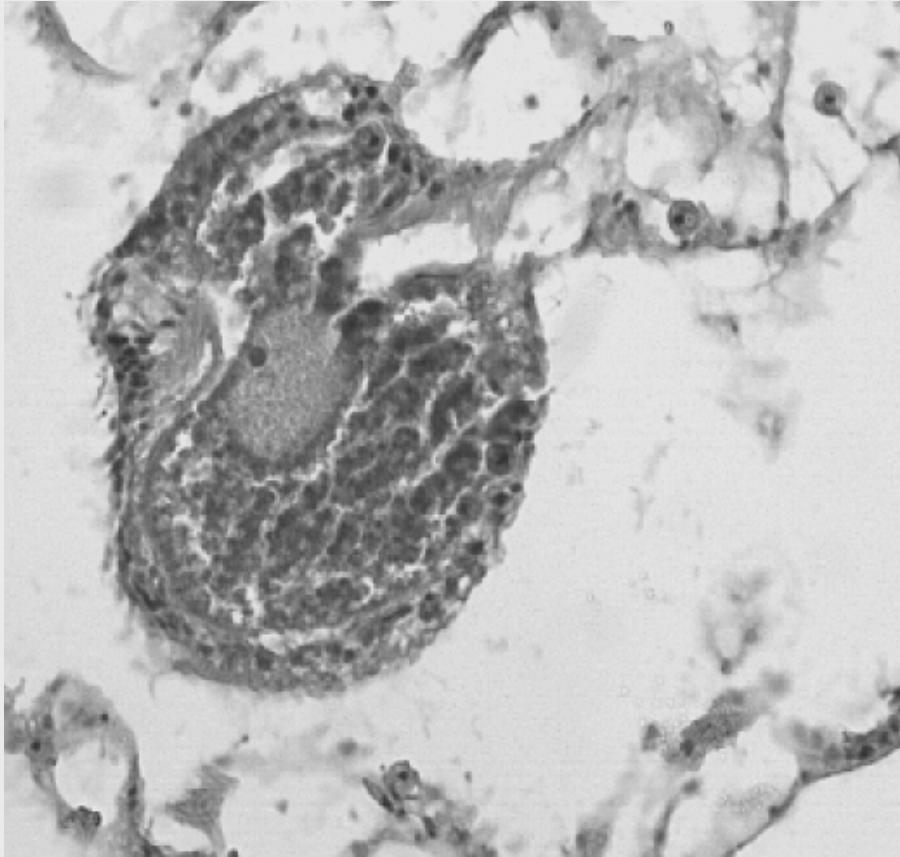
Dave Ward



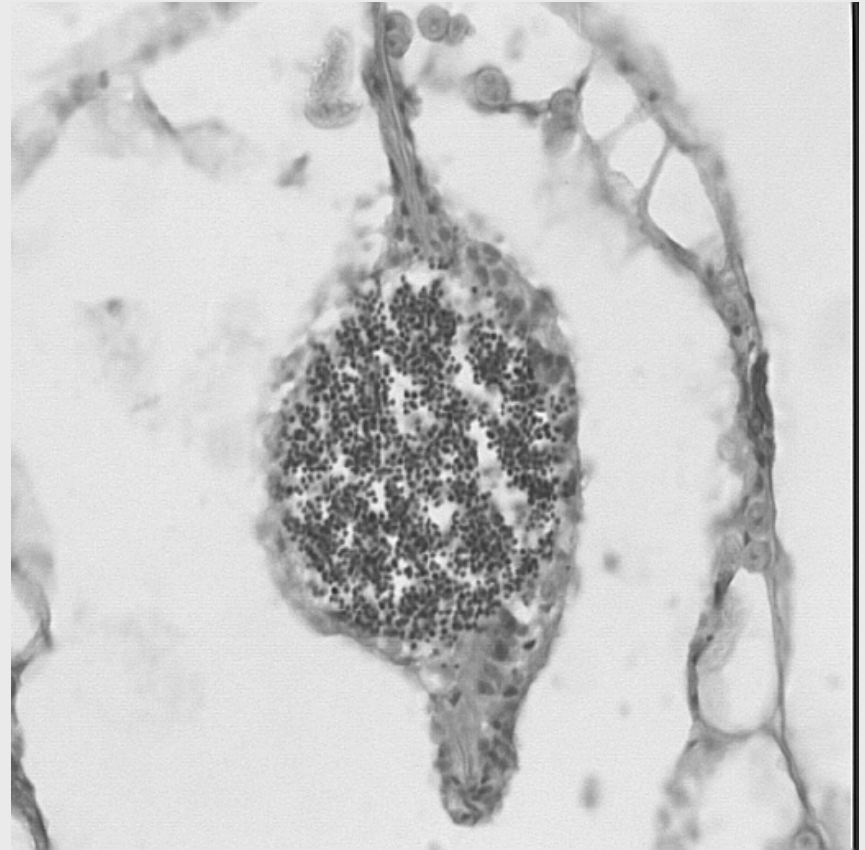
Salt River Canyon, St. Croix, USVI



Porites astreoides
(200x Magnification)



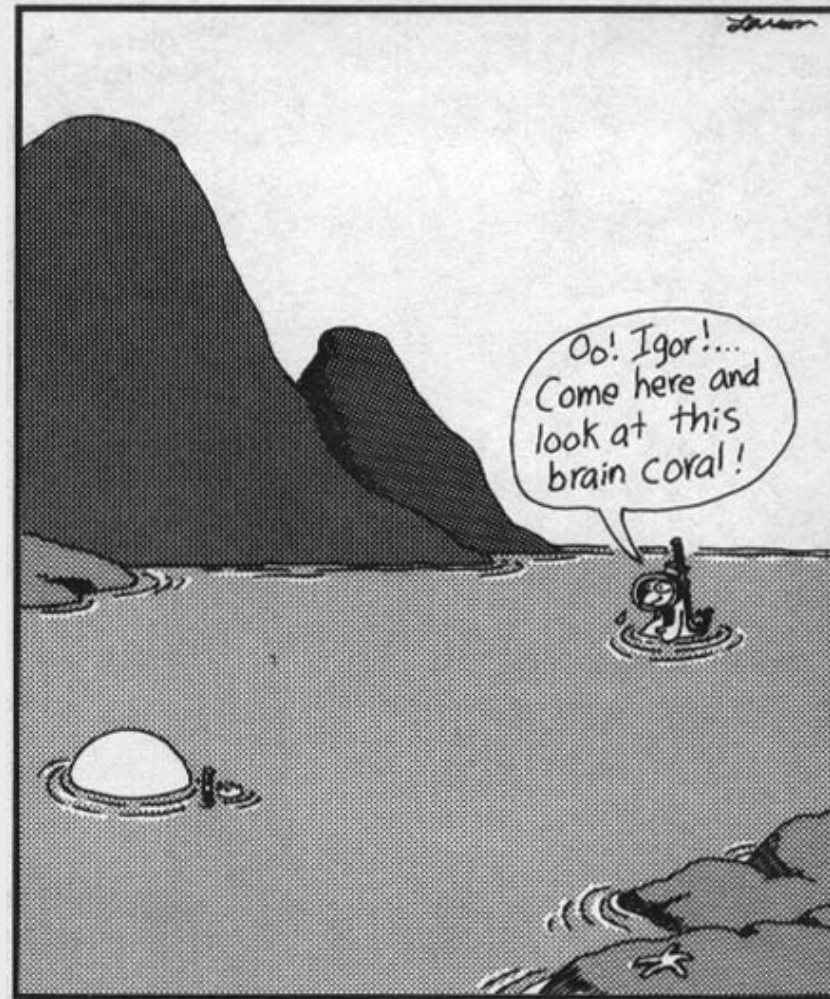
Ovum



Spermary

Acknowledgements

- Peter Edmunds, Ruth Gates
- J. Idjadi, T. Prude, S. Schopmeyer, C. Zilberberg
- Funding provided by National Undersea Research Program at the Univ. of N.C. at Wilmington and the Faculty Research Fund at Georgia Southern Univ.



Dr. Frankenstein vacations in Hawaii